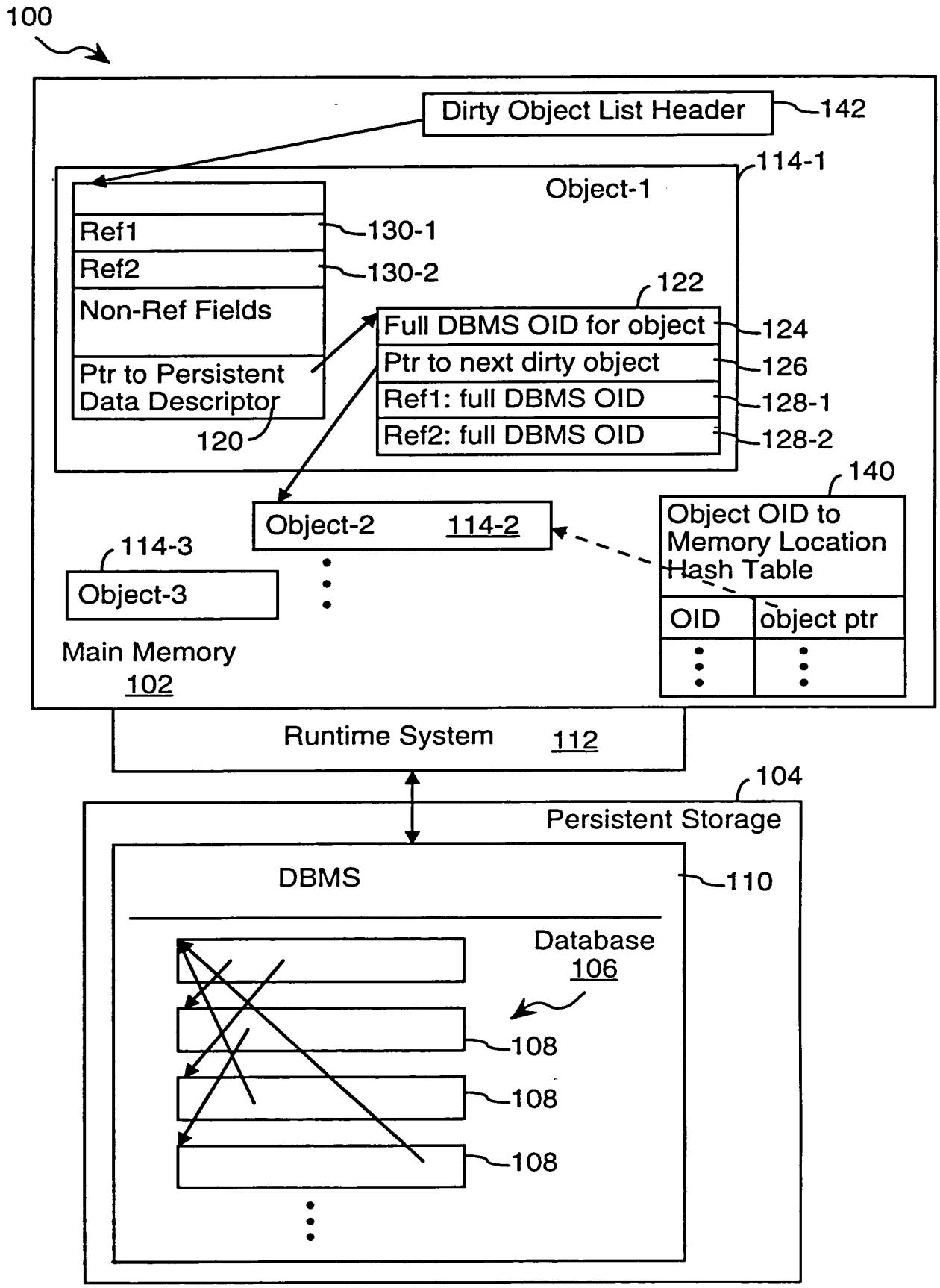

FIG. 1

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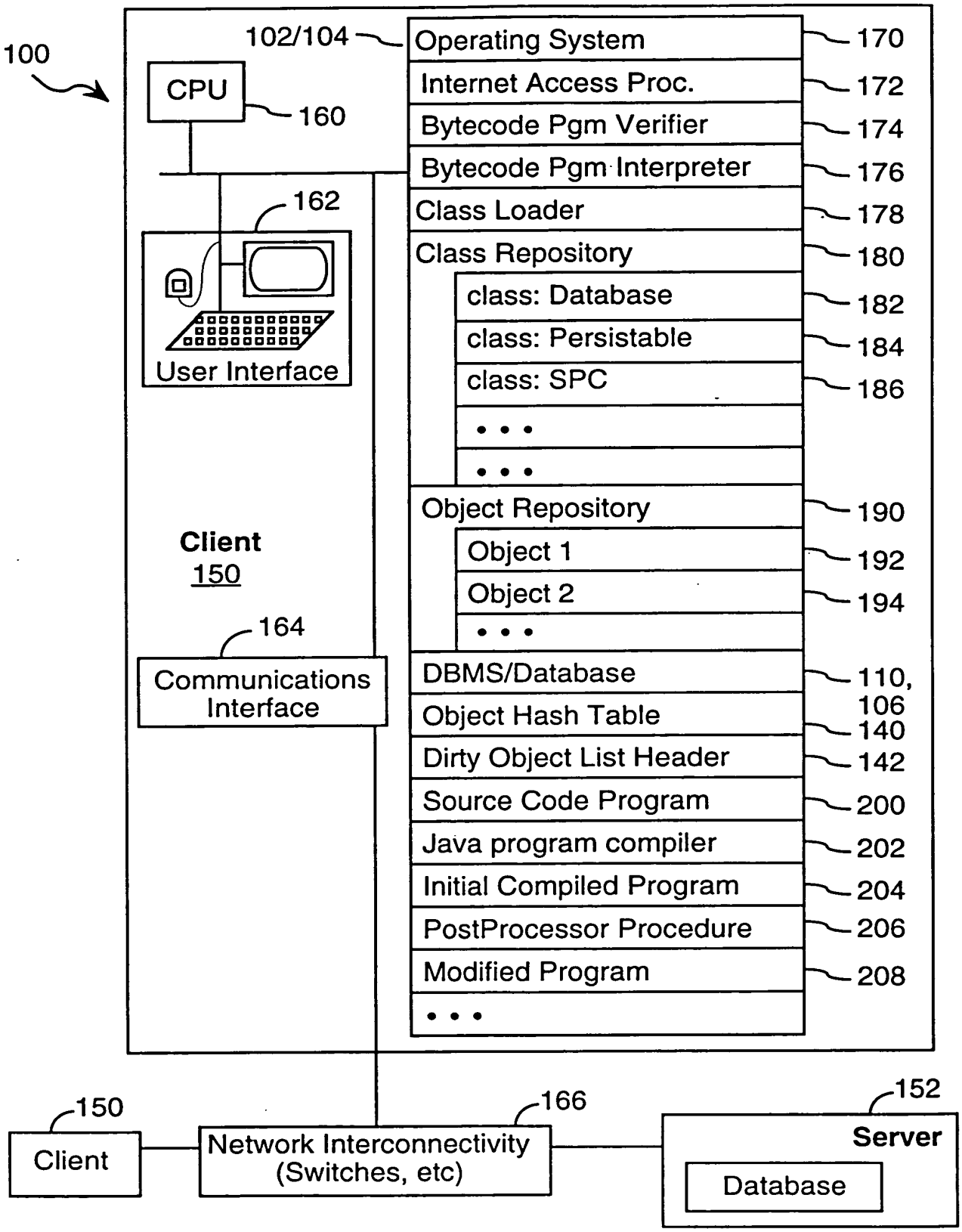
100
102/104
Operating System
170
CPU
160
Internet Access Proc.
172
Bytecode Pgm Verifier
174
Bytecode Pgm Interpreter
176
162
Class Loader
178
Class Repository
180
class: Database
182
class: Persistable
184
class: SPC
186
User Interface
Client
150
Object Repository
190
Object 1
192
Object 2
194
164
Communications Interface
DBMS/Database
110, 106
Object Hash Table
140
Dirty Object List Header
142
Source Code Program
200
Java program compiler
202
Initial Compiled Program
204
PostProcessor Procedure
206
Modified Program
208
150
166
152
Client
Network Interconnectivity (Switches, etc)
Server
Database

FIG. 2

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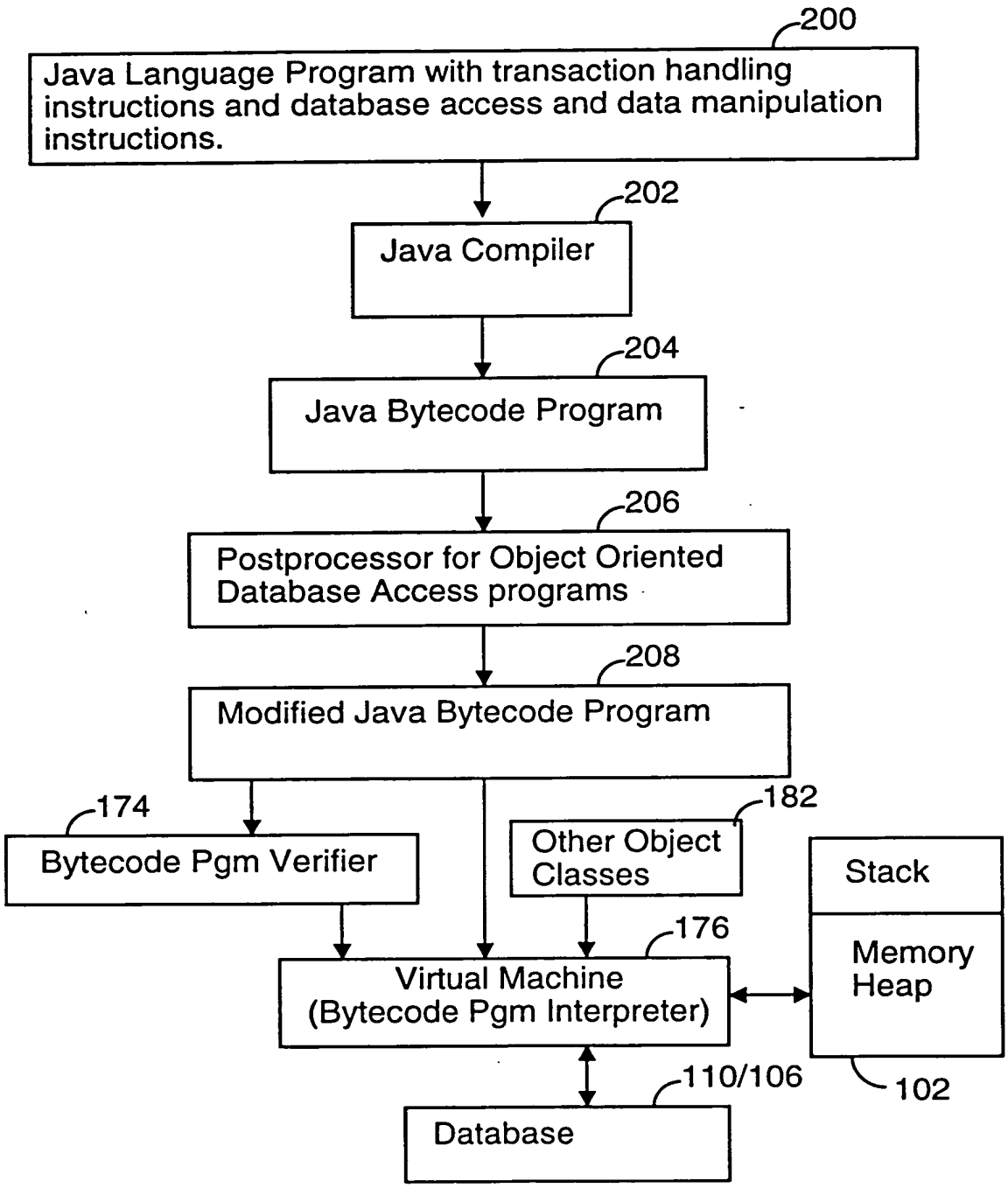

FIG. 3

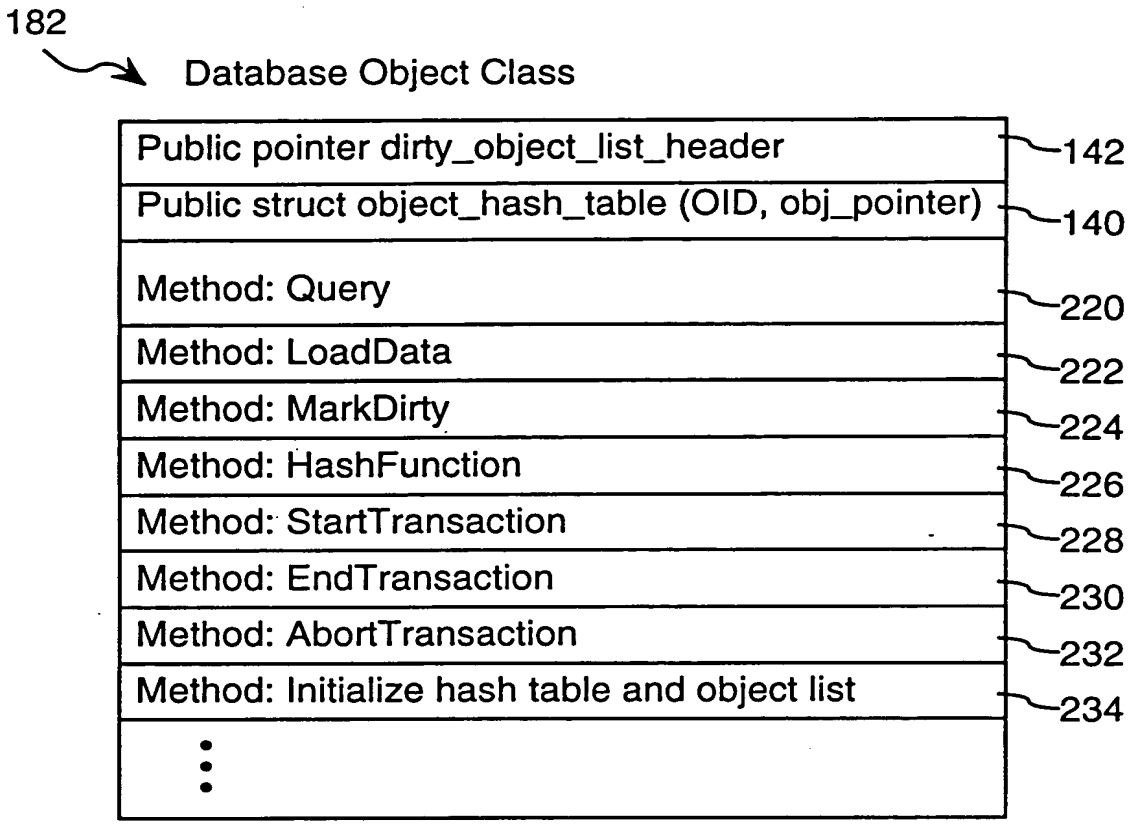
182
Database Object Class
Public pointer dirty_object_list_header
142
Public struct object_hash_table (OID, obj_pointer)
140
Method: Query
220
Method: LoadData
222
Method: MarkDirty
224
Method: HashFunction
226
Method: StartTransaction
228
Method: EndTransaction
230
Method: AbortTransaction
232
Method: Initialize hash table and object list
234

FIG. 4

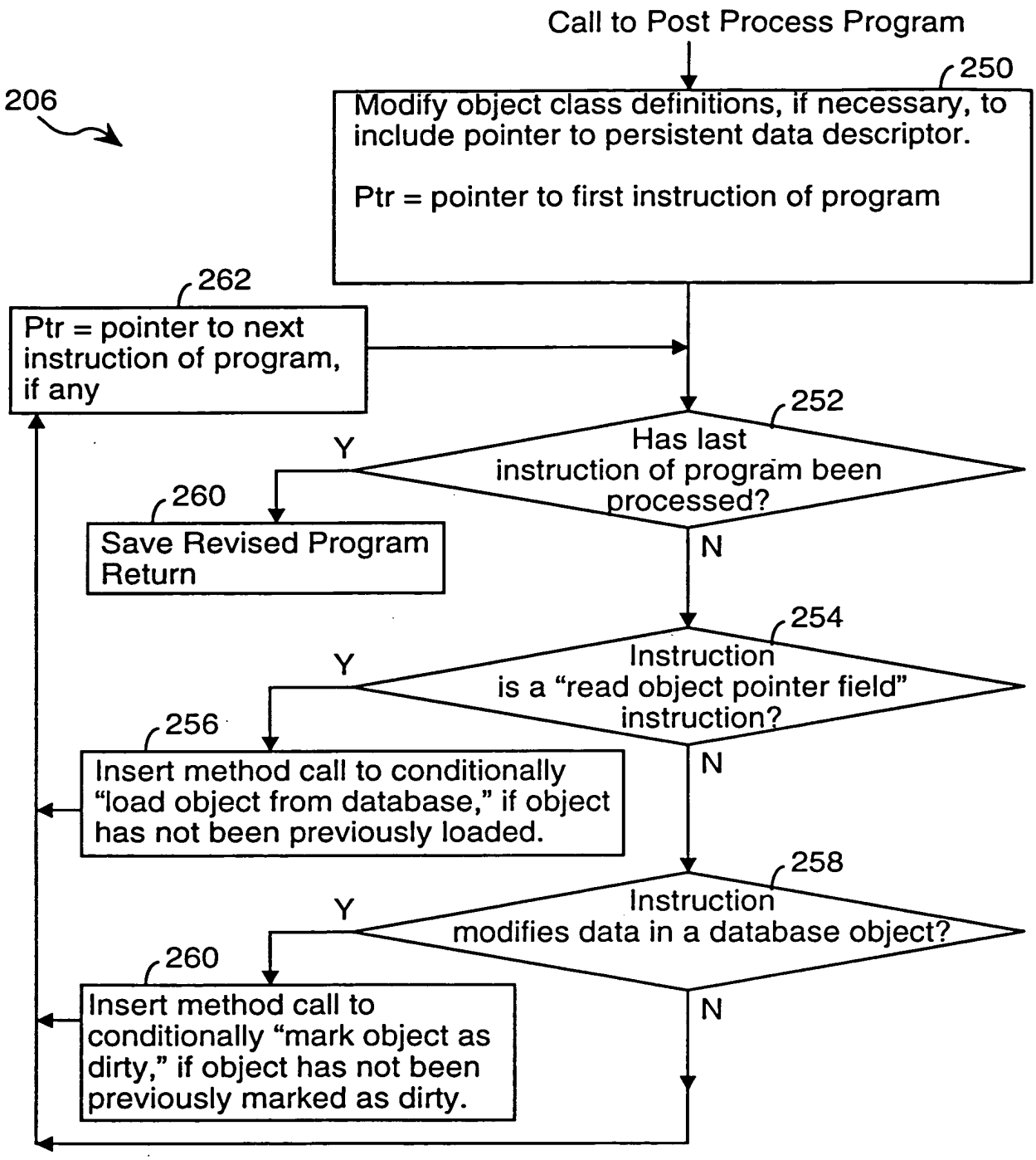
Call to Post Process Program
206
250
Modify object class definitions, if necessary, to include pointer to persistent data descriptor.
Ptr = pointer to first instruction of program
262
Ptr = pointer to next instruction of program, if any
252
Has last instruction of program been processed?
Y
N
260
Save Revised Program Return
254
Instruction is a "read object pointer field" instruction?
Y
N
256
Insert method call to conditionally "load object from database," if object has not been previously loaded.
258
Instruction modifies data in a database object?
Y
N
260
Insert method call to conditionally "mark object as dirty," if object has not been previously marked as dirty.

FIG. 5

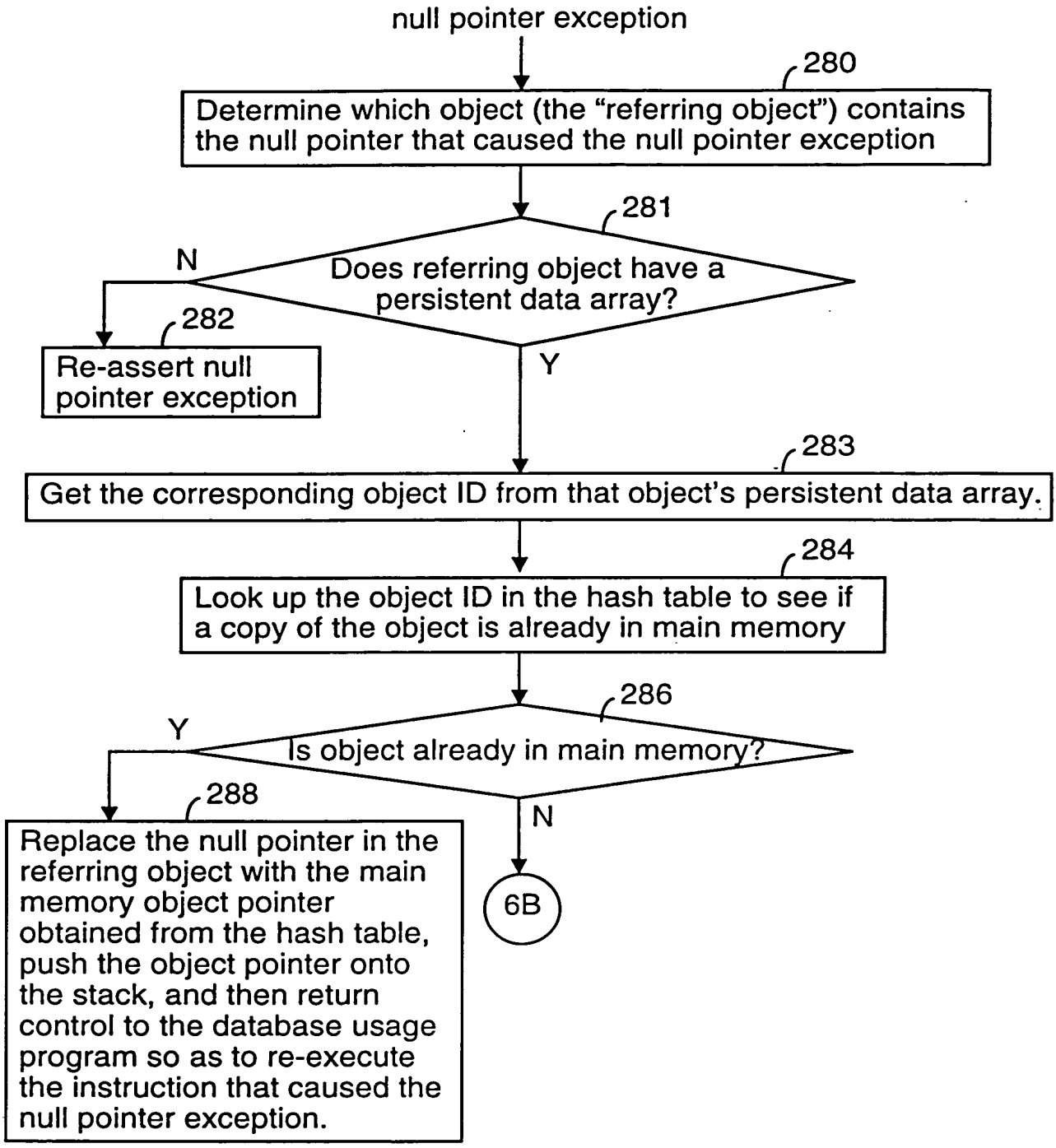

FIG. 6A

FIG. 6A
FIG. 6B

FIG. 6

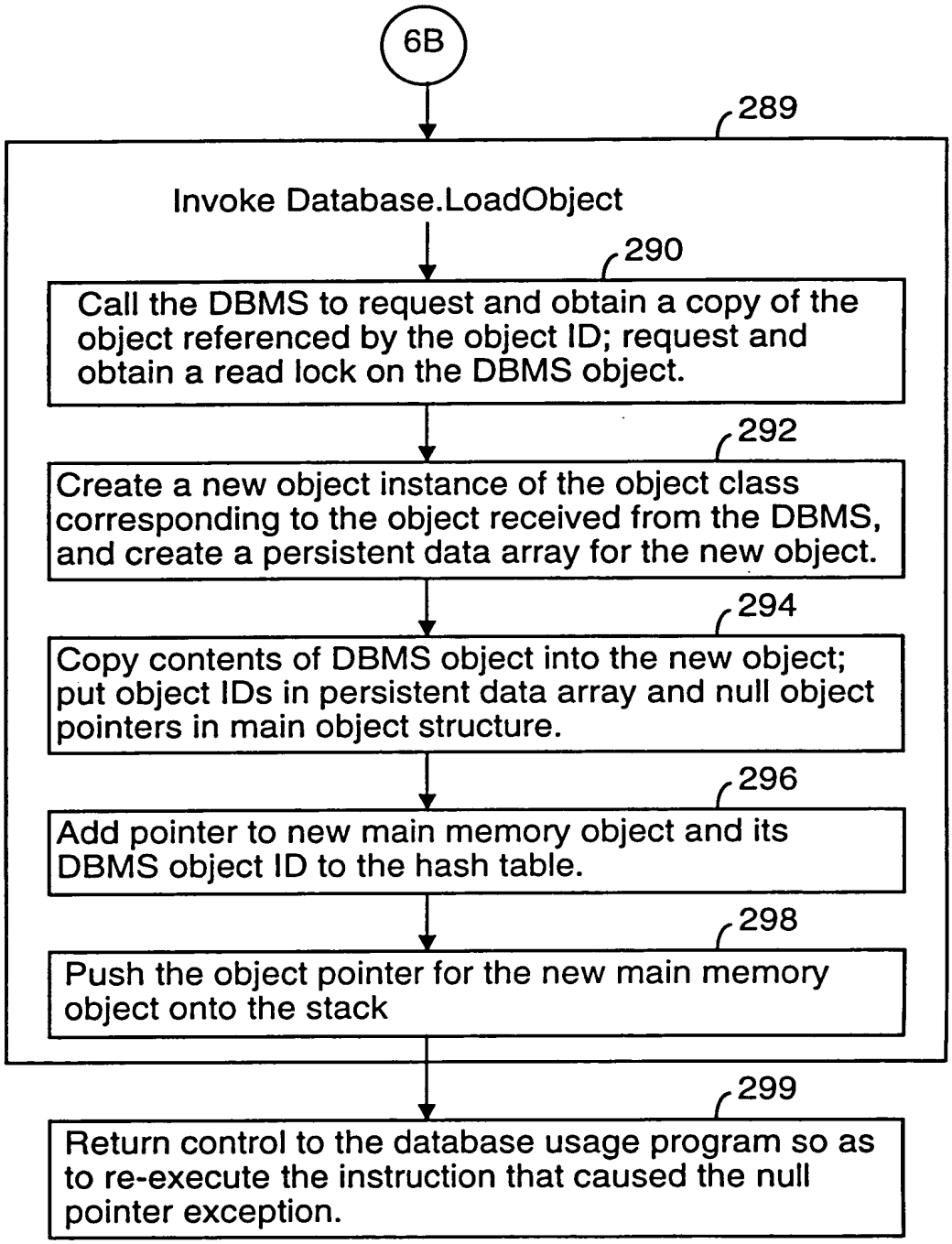

FIG. 6B

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